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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SHOSHO, CALLIE E

ART UNIT

PAPER NUMBER

1714

DATE MAILED: 08/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**Applicant N<sup>o</sup>.

09/673,194

Examiner

Callie E. Shosho

Applicant(s)

WAKI, MINORU

Art Unit

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MS

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 May 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

**Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1, 3-5, and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Fryd et al. (U.S. 6,262,152).

Fryd et al. disclose water-based pigment dispersion wherein pigment, which has particle size of 0.005-15  $\mu\text{m}$ , is dispersed with water-soluble thermoplastic resin comprising carboxyl group. After dispersing the pigment, the dispersant is crosslinked with crosslinking agent, such as polymer or oligomer with acryloyl group, which reacts with carboxyl group. The dispersant is neutralized with amine such as ethylamine and diethylamine. There is also disclosed a process for making the pigment dispersion wherein pigment and dispersant are premixed, pigment is dispersed with the dispersant by milling, dispersant is neutralized, and then crosslinked. The final pH of the dispersion is 7.5-8.5. There is also disclosed an ink comprising the above pigment dispersion (col.2, lines 51-52, col.3, lines 3 and 14-16, col.4, lines 45-47 and 60-64, col.5, lines

11-19, col.5, line 38-col.6, line 6, col.6, lines 11 and 15-21). From example 1, for instance, it is seen that the dispersant has number average molecular weight of 7,800, the ratio of pigment to dispersant is 1.5/1, and the ratio of crosslinking agent to dispersant is 0.17/1 (0.34/2)(col.8, lines 37-38 and 61-62 and col.9, lines 1-10). Although there is no disclosure of the absorbancy ratio of the dispersion, given that Fryd et al. disclose polymer as presently claimed crosslinked with crosslinking agent as presently claimed, it is clear that the dispersion would inherently possess the same absorbancy ratio as presently claimed.

In light of the above, it is clear that Fryd et al. anticipate the present claims.

3. Claims 1, 5, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Jakubauskas (U.S. 3,980,602).

Jakubauskas discloses water-based pigment dispersion wherein pigment is dispersed with water-soluble thermoplastic resin comprising carboxyl group that has acid number of 20-150. The ratio of pigment to dispersant is 0.01/1 to 10/1. After dispersing the pigment, the dispersant is crosslinked with crosslinking agent, i.e. hexamethoxymethyl melamine. The dispersant is neutralized with amine such as ethanolamine. There is also disclosed a process for making the pigment dispersion wherein pigment and dispersant are premixed, pigment is dispersed with the dispersant by milling, dispersant is neutralized, and then crosslinked. The final pH of the dispersion is 7-10 (col.1, lines 50-53, col.2, lines 15-18 and 60-64, col.3, lines 12-26, col.3, line 58-col.4, line 4, col.4, lines 15-16, example 1, and col.16, lines 10-13). From example 1, it is calculated that the ratio of crosslinking agent to dispersant is approximately 0.27/1 (col.6, lines 60-65).

In light of the above, it is clear that Jakubauskas anticipates the present claims.

**Claim Rejections - 35 USC § 103**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fryd et al. (U.S. 6,252,152) in view of either Suga et al. (U.S. 5,604,276) or Satake et al. (U.S. 5,814,685).

The disclosure with respect to Fryd et al. in paragraph 2 above is incorporated here by reference.

The difference between Fryd et al. and the present claimed invention is the requirement in the claims of acid number of the dispersant.

Suga et al., which is drawn to ink jet ink, disclose the use of dispersant which has acid number of 50 to 300 and further disclose that if the acid number is too low, the resin becomes

insoluble in water while if the acid number is too high, the dispersant is not absorbed on the pigment surface (col.4, lines 22-32).

Alternatively, Satake et al., which is drawn to ink jet ink, disclose the use of dispersant which has acid number of 50-250 and further disclose that if the acid number is too high, the water resistance of the printed matter decreases, while if the acid number is too low, stability of dispersion is reduced (col.4, line 62-col.5, line 4).

In light of motivation for using dispersant with specific acid number disclosed by either Suga et al. or Satake et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use dispersant with such acid number in Fryd et al. in order to produce dispersant which effectively disperses pigment, or alternatively, produce stable dispersion and water resistant printed image, and thereby arrive at the claimed invention.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fryd et al. (U.S. 6,252,152) or Jakubauskas (U.S. 3,980,602) either of which in view of Tsuruoka et al. (U.S. 5,444,118).

The disclosure with respect to Fryd et al. in paragraph 2 above and Jakubauskas in paragraph 3 above are incorporated here by reference.

The difference between Fryd et al. or Jakubauskas and the present claimed invention is the requirement in the claims of the gel content and the number average molecular weight of the crosslinked polymer.

Tsuruoka et al., which is drawn to paper coating composition, disclose the use of carboxyl containing latex that has gel content of 30-85%. The motivation for using such latex is

that is has good bonding strength and mechanical strength (col.2, lines 20-21 and col.10, line 65-col.11, line 2). Given the relationship between molecular weight and gel content, it would have been natural for one of ordinary skill in the art to infer that a polymer which has the same gel percent as presently claimed would intrinsically possess same number average molecular weight as presently claimed.

In light of the motivation for using polymer with specific gel content disclosed by Tsuruoka et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use dispersant with such gel content in Fryd et al. or Jakubauskas in order to produce dispersant with good bonding and mechanical strength, and thereby arrive at the claimed invention.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Houze et al. (U.S. 6,204,319) and Chu et al. (U.S. 5,231,131) each disclose pigment dispersion as presently claimed, however, the ratio of crosslinking agent to dispersant in each reference falls outside the scope of the present claims.

Held (U.S. 5,853,861) disclose printing ink comprising pigment and dispersant onto textile comprising crosslinking agent.


JP 09255867 discloses dispersion comprising self-emulsifying urethane polymer, tackifying resin, and crosslinking agent, however, there is no disclosure of water-based pigment dispersion as presently claimed.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Callie E. Shosho  
Examiner  
Art Unit 1714

CS  
August 1, 2002